

DEPARTMENT OF AGRICULTURE AND TECHNICAL
INSTRUCTION FOR IRELAND.

REPORT

OF THE

DEPARTMENTAL COMMITTEE

ON THE

IRISH FLAX-GROWING
INDUSTRY.

Presented to both Houses of Parliament by Command of His Majesty.



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To His Excellency, JOHN CAMPBELL, EARL OF ABERDEEN, &c., &c.,
LORD LIEUTENANT-GENERAL AND GENERAL GOVERNOR OF IRELAND.

MAY IT PLEASE YOUR EXCELLENCY,

I am directed by the Vice-President to submit to Your Excellency the
Report of the Departmental Committee on the Irish Flax-growing Industry.

I have the honour to remain,

Your Excellency's faithful Servant,

T. P. GILL,

Secretary.

DEPARTMENT OF AGRICULTURE
AND TECHNICAL INSTRUCTION FOR IRELAND,
UPPER MERRION STREET,
DUBLIN, 3rd February, 1911.

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(NOTE.—The Minutes of Evidence, with a Subject Index thereto, and the Appendices are published in a separate volume [Cd 5503] 1911. The references to the evidence on the various matters mentioned in the Report will be found in the Subject Index.)

COPY
OF
MINUTES APPOINTING THE COMMITTEE.

I.

I HEREBY nominate and appoint a Committee to inquire into the present state of the flax-growing industry in Ireland and the causes which are contributing to the decline of that industry, and to submit recommendations.

The Committee will consist of the following:—

JOHN RITCH CAMPBELL, Esq., B.Sc., Assistant Secretary in respect of Agriculture of the Department of Agriculture and Technical Instruction for Ireland (Chairman);

HAROLD A. M. BARBOUR, Esq., M.A., (Messrs. William Barbour & Sons, Limited, Flax Spinners, Lisburn);

JAMES G. CRAWFORD, Esq., (York Street Flax Spinning Company, Limited, Belfast);

JOHN W. STEWART, Esq., (Flax Grower and Scutch Mill Owner, Boghill, Coleraine);

JAMES STEWART, Esq., J.P., (Flax Grower, Liskey, Strabane);

BERNARD MEENAN, Esq., J.P., (Member of the Board of Conservators of Fisheries for the Coleraine District);

JAMES SCOTT GORDON, Esq., B.Sc., (Chief Agricultural Inspector of the Department of Agriculture and Technical Instruction for Ireland);

JOSEPH H. HINCHCLIFF, Esq., Ph.D., (Agricultural Inspector of the Department of Agriculture and Technical Instruction for Ireland);

(Signed) T. W. RUSSELL,

Vice-President of the Department of Agriculture
and Technical Instruction for Ireland.

Dated the 30th December, 1909.

II.

I HEREBY nominate and appoint DANIEL HENRY LANE, Esq., J.P. (Member of the Board of Conservators of Fisheries for the Cork District), to be a member of the Departmental Committee on the Irish Flax-growing Industry, in the place of BERNARD MEENAN, Esq., J.P., deceased.

(Signed) T. W. RUSSELL,

Vice-President of the Department of Agriculture
and Technical Instruction for Ireland.

Dated the 7th April, 1910.

REPORT.

TO THE RIGHT HON. T. W. RUSSELL, P.C.,

VICE-PRESIDENT OF THE DEPARTMENT OF AGRICULTURE AND TECHNICAL
INSTRUCTION FOR IRELAND.

SIR,

By your Minutes, dated the 30th Decemaher, 1909, and 7th April, 1910, we were constituted a Committee "to inquire into the present state of the flax-growing industry in Ireland and the causes which are contributing to the decline of that industry, and to submit recommendations."

INTRODUCTION.—
METHOD OF
INQUIRY.

We have now agreed to the following Report:—

PROCEEDINGS.

1. In order to obtain evidence on the matters submitted to us for report, we directed the issue of letters to numerous local authorities, associations, and societies connected with the industry, and the majority of the witnesses whom we examined were gentlemen deputed by these bodies to appear before us as representatives competent to furnish us with authoritative evidence.

2. We also directed the publication in various newspapers of notices setting forth the objects of our inquiry, and expressing our willingness to receive and to consider written statements or oral evidence from persons who desired to lay their views before us.

3. We held sittings for the hearing of evidence on seven days in Belfast, on two days in Dublin, on two days in Strabane, and on one day in each of the following towns:—Armagh, Ballybay, Ballymena, Ballymoney (Co. Antrim), Ballynahinch (Co. Down), Banbridge, Coleraine, Cookstown, Dungannon, Limavady, Londonderry, Magherafelt, and Newry. The proceedings were open to the public and to the Press. In all, we have held 24 sittings for the reception of evidence, and we have examined 188 witnesses.

4. The evidence received at Belfast is principally that of representatives of spinning firms using large quantities of both foreign and Irish flax. Among other witnesses examined at this centre were representatives of the Royal Ulster Agricultural Society, the Belfast Co-operative Flax-growers' Society, the Antrim and Down County Committees of Agriculture, and the Coleraine Board of Conservators of Fisheries.

5. We examined at Dublin a number of witnesses who gave evidence regarding the condition of the industry in the counties of Cork and Mayo; these gentlemen were deputed to appear before us by the Committees of Agriculture for their respective counties. Evidence on behalf of the Irish Agricultural Organisation Society was also heard at Dublin.

6. The provincial towns in which the rest of the sittings were held are situated in the principal flax-growing districts in the North of Ireland, and in many of them a regular market for the sale of flax exists. Prior to the sitting at each of these centres, an advertisement was inserted in the local newspapers, announcing the date and place of our meeting, and requesting the presence of flax-growers, scutch-mill owners, and others interested in the industry. The attendance at these sittings was, on the whole, satisfactory, and on each occasion an opportunity was afforded to those present to express their views on any of the matters under consideration by the Committee. Much valuable information was thus obtained from farmers who still include flax in their rotation of crops, as well as from those who, for various reasons, have ceased to cultivate it. Evidence was also received at these sittings from a large number of scutch-mill owners, many of whom are engaged in the cultivation of flax in addition to the scutching and marketing of the crop.

7. We have taken a considerable amount of evidence on the subject of the pollution of rivers by the discharge of water from dams in which flax has been steeped. The difficulties generally experienced by flax-growers in the disposal of flax-water were explained to us by representatives of the North-West Farmers' Defence Association, and other agricultural societies, whilst the case from the fishery point of view was presented to us by witnesses deputed by the Boards of Conservators for the fishery districts principally concerned, the Foyle and Bann Fisheries Company, and the Omagh Anglers' Association. The evidence of these bodies was supplemented by that of a number of farmers, anglers and fishermen who came before us in their individual capacities. We have taken the opinion of Mr. W. S. Green, C.B., Chief Inspector of Fisheries, Department of Agriculture and Technical Instruction for Ireland, regarding the various proposals put before us with a view to overcoming the difficulties in question and to promoting a better feeling between the two interests. We inspected a large number of flax-dams, in Counties Donegal, Down, Londonderry, and Tyrone, many of which are situated in the vicinity of important salmon rivers and their tributaries. We also visited the Clay Lough in County Down and Lough Enagh in County Londonderry, in both of which it is customary to steep large quantities of flax.

8. The manurial experiments and seed trials conducted by the Department of Agriculture and Technical Instruction for Ireland were frequently referred to by witnesses in the course of their evidence. We accordingly made, early in July last, an inspection of various field experiments which were being carried out in Counties Donegal and Tyrone under the direction of the Department.

9. We have received from Mr. William M. Oliver oral evidence on the subject of the decline of flax-growing in Yorkshire. Mr. Oliver still grows the crop to some extent, and is interested in certain mills at Staddlethorpe, which were until recently used for the scutching of flax.

10. We have obtained through the courtesy of the Foreign Office memoranda and statistics regarding the past development, the present condition, and the prospects of the industry in those continental countries in which flax is extensively grown. We have also been supplied, from the same source, with information as to the legislative enactments in force in some of these countries relating to the control, in the interests of fisheries, of the disposal of water from dams in which flax has been retted.

11. In addition to the oral evidence, we have had submitted to us a memorial signed by thirty-five fishermen engaged in the salmon-fishing industry on the sea-coast of the Londonderry and Coleraine fishery districts; a memorandum signed by sixteen flax-buyers, representing various spinning

mills and commission houses; as well as many letters and other written statements on the subjects of our inquiry. All of these have received our careful consideration.

DISCOVERIES.—
METHOD OF
INQUIRY.

PRESENT CONDITION AND PROSPECTS OF THE INDUSTRY.

PRESENT
CONDITION AND
PROSPECTS.

Average under
Flax.

12. The area under flax in Ireland in 1910 was 45,974 acres, and the value of the crop was estimated at over £500,000 sterling. In 1847, the earliest year for which official records are available, the acreage was 58,312. A study of the statistics for the intervening years shows that from time to time there have been great fluctuations in the area under this crop. For example, while in 1853 it had risen to 174,579 acres, three years later it had fallen to 97,075 acres. Stimulated by the unprecedented scarcity of cotton during the American War, the area again increased rapidly, until in 1864 it reached 301,693 acres—the highest recorded. From that date, although the area fluctuated within wide limits, on the whole it gradually declined, and in 1898 stood at 34,469 acres—the minimum recorded. Since then some improvement has taken place, as indicated by the following figures showing the average annual extent of the crop in each five-year period from 1895 to 1910:—1895-1900, 46,939 acres; 1901-1905, 48,064 acres; 1906-1910, 49,169 acres. The fluctuations which have always characterised the area under flax have, however, continued, and they are still so marked that we cannot, from a mere study of the figures, assume that the decline has at length been arrested, or that the recent increase in the acreage will be maintained.

The violence which characterises the fluctuations is, no doubt, largely accounted for by the fact that flax is not an essential part of the rotation of crops, as practised in Ireland. Temporary grass, grain, and green crops are what the farmer usually cultivates. Their systematic rotation is essential to the system of husbandry suited to Ireland, as they are necessary either for the cleaning and the amelioration of the soil or for the maintenance of the stock kept upon it. Flax, however, is not required for either the one purpose or the other, and the farmer merely grows it as a stolen crop between two of the staple crops in his rotation whenever he happens to have a piece of land specially suitable for its growth, or when the prospects of a good price for fibre are attractive. So necessary are grass, grain, and green crops for the farmer's general operations, that, notwithstanding a bad return in any one year, he is bound to keep his land for a few years at least under the essential crops of the rotation. To lay it out to pasture or to change materially the rotation of staple crops would take some years. It is only a prolonged period of bad seasons or of depression of prices that brings about a general reduction in tillage and a corresponding increase in pastures of a permanent character. The rotation therefore exercises a steady influence on the area under ordinary tillage crops but does not so affect that under flax. Since flax is not an essential crop in a rotation, the farmer, in growing it, is determined by one consideration only, viz., the net return he will get for the crop. Accordingly, we find that a year of profitable return is generally followed by an increase in the area, while a bad year has, of course, the reverse effect. This rule, however, only holds good so long as the area under tillage and rotation is maintained, and so long as the period of depression is not continued to such an extent as to admit of the art of growing and handling flax being entirely lost.

13. Although the statistics do not by themselves justify definite conclusions in regard to the future of the industry, there are some considerations which encourage us to believe that flax-growing in certain districts of Ireland will be continued and even extended.

Prospects of
Development.

14. In the first place, it must be remembered that when the acreage was much greater than it is now, the crop was more widely distributed than it has been within recent years. At present it is cultivated chiefly in Ulster and in restricted areas in the counties adjoining that province.

Distribution
the Crop

Elsewhere flax is grown only in small districts of Counties Cork and Mayo. Comparing the average acreage of the last twenty years with that of the preceding twenty years, we find that there has been a decline of 87 per cent. in Leinster, 88 per cent. in Munster, 86 per cent. in Connaught, and 52 per cent. in Ulster. In the last named province the reduction has been most marked in those counties—Monaghan, Cavan and Fermanagh—which are furthest removed from the chief centres of the spinning industry. The area, therefore, over which the cultivation of the crop is general, has by degrees become restricted mainly to Counties Antrim, Down, Londonderry, and Tyrone. In these counties the falling off has been less marked, and, indeed, in certain parts of them flax-growing shows comparatively little sign of decay.

15. A second and more important consideration is that some classes of Irish flax possess in a special degree strength and spinning qualities so well adapted for thread and certain other yarns that they are almost a necessity in several branches of the Irish linen industry. At present only about one-fifth to one-fourth of the fibre used in Irish mills is grown in this country, and since the linen industry of the North appears to be extending, as shown by the increasing number of spindles employed, there would seem to be prospects of a good demand for flax. Irish growers, however, can only hope for continuous success if they produce high-class fibre. They cannot expect remunerative prices by competing with the inferior Russian article, which is produced in great quantities at comparatively small cost. Furthermore, it would seem that the area under flax in Russia is capable of considerable and rapid extension.

It was pointed out to us by several witnesses that a number of Irish spinners use no home-grown fibre. We were informed, however, that this is due, not to any lack of appreciation of Irish flax on the part of these firms, but to the quality and price of foreign fibre being better suited to the class of goods which they manufacture. Although spinners admit that so long as foreign supplies are plentiful, the linen industry might be carried on without Irish-grown fibre, we do not think that as a body they are indifferent to the flax-growing industry in this country. Apart altogether from the fact that Irish flax is required by certain firms for special purposes, it appears to us, from the evidence given by some of the leading men in the trade, that spinners fully realise the necessity of keeping alive the art of growing and handling flax in Ireland, so that in the event of a sudden decrease in foreign supplies, farmers, with prospects of higher prices, might be able to produce a greatly increased supply of fibre to meet the needs of the mills. Experience shows, however, that once the custom of growing flax ceases, and scotch-mills become dismantled, it is exceedingly difficult to revive the industry. Hence it is greatly to the interests of Irish spinners that flax-growing should be maintained, and accordingly we consider that they should be prepared to give preference to home-grown fibre whenever it suits their purpose and can be purchased as cheaply as the foreign article.

16. A third point to be considered is the contemporary decline in flax-growing in other countries. Information supplied to us through the Foreign Office and other channels indicates that there has been a decrease—in some cases a very serious one—in the area under the crop in Austria, Belgium, France and Germany. In Holland, Hungary, and Russia the area may be regarded as stationary at present, while in Great Britain the cultivation of the crop has practically ceased. The fact that in Ireland the decline in the acreage has not been proportionately greater than that in some of the other flax-growing countries is distinctly hopeful. Had the reduction in the area under the crop in this country been accompanied by a corresponding increase in other flax-producing centres of Europe, we would have been forced to the conclusion that the industry was being gradually transferred from Ireland to countries where economic and agricultural conditions were more favourable to its continuance and development. At times there has been an over-production of fibre, and for this reason, as well as on account of periods of bad trade, the price of fibre has fallen so low that the cultivation of flax has become unremunerative. At

present, although trade is not particularly brisk, flax is so scarce that prices have risen within the past sixteen months to an almost unprecedented extent. In view of the high prices for fibre now prevailing, it may be anticipated that the world's acreage will increase, and we see no reason to believe that there will not be in Ireland an extension proportionate to that in other countries.

Flax
Cultivation and
Production.

17. There is still a fourth consideration, and one which has a dominating influence on the future of the industry. Important evidence was given by Mr. Robert H. Reade, D.L., of the York Street Flax Spinning Company, Ltd., and by Mr. Robert Thompson, M.P., of Lindsay, Thompson & Co., Ltd., indicating that the world's production of cotton is not keeping pace with increasing requirements, and that the price of cotton is therefore likely to maintain a higher level in future. This must create a greater demand for linen goods, which will in turn result in an improvement in the demand for and price of fibre.

Influence of
Cotton
Industry.

EXAMINATION INTO THE CAUSES ASSIGNED FOR THE DECLINE IN FLAX-GROWING.

Causes
Assigned for
Decline.

18. Various causes were assigned by witnesses for the decline in the cultivation of the flax crop. These may be summarized briefly as follows:—(1) low prices; (2) uncertainty of yield; (3) defective cultivation; (4) inferior seed; (5) careless handling; (6) want of confidence in the system of marketing; (7) scarcity, inefficiency and increased cost of labour; (8) adverse seasons; (9) restrictions imposed by fishery laws.

Before proceeding to consider the bearing of each of these on the subject under inquiry, we desire to state that in our opinion, while they have all contributed more or less to the decline, the outstanding cause is the speculative character of the crop due to the uncertainty of price and yield. Indeed, many of the witnesses in expressing the same view stated that as compared with the cultivation of other crops flax-growing is a "pure gamble."

19. Farmers in their evidence were almost unanimous in pointing to low prices as the main cause of the decline. Many of them asserted that if they had a reasonable hope of obtaining an average price of 7s. 6d. per stone for their flax, and a yield of about 35 stones per statute acre, i.e., a gross return of about £13 per acre, they would continue to grow the crop, and that many of their neighbours who had given up the industry would be induced to resume it. It will be observed, however, from the official statistics that only twice during the last thirty years has the average price of flax reached the figure mentioned. During the present season, owing to a most exceptional shortage of fibre, prices have steadily risen until they have now reached a level not previously experienced by many growers of this generation. This shows that the price of a given quality of flax is regulated at any particular time by the law of supply and demand, over which the farmer has of course practically no control. In one way only can he increase the price, viz., by improving the quality of his fibre. But the monetary return from the crop is influenced as much by the yield as by the price obtained, and we think, therefore, that, instead of relying on the possibility of a combination of favourable circumstances raising the price of flax, the farmer should seek to secure a more remunerative return by bringing out the fibre to the best advantage and by endeavouring to increase the yield.

Price.

Many farmers when they receive a poor price for their fibre at a time when the linen industry is prosperous, are somewhat suspicious that they are not being fairly treated, as they naturally expect that when yarns are dear fibre should be dear also. Under these circumstances the tendency of the farmer is to abandon the cultivation of the crop and to confine himself to the production of those commodities the sale and disposal of which he more thoroughly understands. We are, however, informed by the spinners that owing to circumstances such as the trade custom of entering into contracts extending over long periods, the price of yarn may have little relation at any particular time to the cost of the raw material.

Complaints were also made that the spinners give a relatively higher price for certain classes of foreign flax than for those grown in Ireland. We are not satisfied that there are sufficient grounds for such a statement. We must assume that the spinners are conducting their business on strictly commercial lines, and that they are buying in the cheapest market the fibre which will suit their purposes. Russian flax comprises the lowest classes of fibre. The best and most expensive is got from selected crops grown in Belgium, Holland, and France, and retted in the Lys. Fibre so produced is known in the trade as "Courtrai," and is used for the finest yarns. Irish-grown fibre occupies an intermediate position between the highest grades of Russian and the medium classes of Courtrai. We are informed that a given weight of a definite quality of "line," i.e., hackled flax, costs practically the same whether made from foreign or from Irish flax. In other words, the prices paid by the spinners for scutched flax when calculated on this basis are approximately the same for all classes of fibre irrespective of the country of origin. The price per stone given for Courtrai is, however, higher than that paid for Irish flax capable of producing the same quality of line, but this is explained by the fact that the former is prepared under the above-mentioned special conditions, which have not hitherto been profitably imitated in this country, and it therefore produces so much more line that it is entitled to the higher price.

We would observe in this connection that the decline in the cultivation of the crop in some of the principal flax-growing countries of Europe indicates that the effect of low prices in reducing the area is felt abroad as well as at home.

Yield.

20. As we have already stated, numerous farmers who appeared before us expressed the opinion that as compared with most other farm operations, the cultivation of flax is a pure gamble. They asserted that under favourable circumstances flax might yield a very handsome profit, better even than the best that could be expected from any other crop. On the other hand, they pointed out that for a number of reasons it might be a total failure. The speculative character of the crop arises from the uncertainty both of price and yield. We have dealt with the question of price in the preceding section. With regard to yield, there appears to be no doubt that the successful cultivation of flax depends much more upon the suitability of the soil, seasons, and seed than is the case with other crops. Even the result of the application of manures is comparatively uncertain, as has been shown by experiments conducted for many years by the Department of Agriculture. Moreover, flax requires in its preparation for market to be subjected to certain highly technical processes, in the course of which it is liable to serious depreciation. The cost, too, of growing and handling the crop is comparatively high—a circumstance which, of course, greatly increases the loss to the farmer when it is a partial or an entire failure. We are satisfied that the reluctance of farmers to undertake flax-growing is due in great measure to the uncertainty of yield. Some of the causes of this uncertainty, such as those relating to the quality of the soil, are obscure and require investigation. For those such as unsuitable seasons no remedy can be prescribed. There are, however, a number of others, for example, the inferiority of seed, and defects in handling, regarding which, as we point out in the paragraphs under these headings, some action might be taken which would render the yield less precarious.

Cultivation.

21. We do not propose to deal with the various operations in the cultivation of flax, as they are described in detail in a memorandum* prepared by Mr. John W. Stewart, a member of our Committee, and which will be found among the appendices to this report.

Charges were made by many witnesses that the Irish farmer fails to cultivate the crop as intelligently as his competitors on the Continent. During recent years the Department of Agriculture have sent a number of farmers annually to Holland and Belgium, to examine into the methods practised there. They have no doubt seen in those countries well-cultivated fields of flax, and possibly

* Appendix B.

fewer failures than are to be found in Ireland. The crops in Holland and Belgium are also more uniform than those grown in this country. It must be borne in mind, however, that as a rule the soil in several parts of the Continent where flax is cultivated, particularly in Belgium, is very uniform in character and easily tilled. In contrast to this, the soil in Ireland is more difficult to till, and so extremely variable in character that different fields and even parts of the same field, require different treatment. Flax crops of the same uniformity as those raised on the soils near Courtrai or other districts of the Continent cannot, accordingly, be produced on Irish fields. While we do not take the view that Irish flax-growers, as a body, have nothing to learn in regard to the selection of fields, their cultivation, and the use of manures, we believe that many of them are doing the best possible in the difficult circumstances under which they work. Some witnesses held that flax exhausts the land, leaving it "flax sick." This opinion was so repeatedly controverted by experienced growers that we are not satisfied that flax injures the land to the extent generally believed.

With regard to the manner in which improvement in the cultivation of flax can best be promoted by the Department, we direct attention to paragraphs 28 and 29.

22. Irish farmers, at the present time, do not grow their own seed. They are dependent upon supplies from abroad, mainly from Russia and Holland. Numerous tests carried out by the Department of Agriculture at their seed testing station show, so far as is possible with such tests, that there is considerable variation in the quality of the seed imported, and we have no doubt that there is a great deal of truth in the statements made by witnesses that one of the chief causes of inferior crops is the irregularity and defective character of the seed sown. We were informed that within recent years some improvement has been observed, but it was urged upon us by many witnesses that still further improvement in this direction is necessary as they held that in the securing of better seed lay the chief means of increasing the yield.

It was frequently alleged that the seed brought from the Continent at the present time compares unfavourably with that imported many years ago. We find, however, from the statistics relating to the crop, that the average yield per acre in this country during recent years is quite as good as that which was obtained in former times. Moreover, a number of farmers assured us that they had recently grown first-class crops from more than one brand of seed in the same year, and it is difficult to believe that what they sowed was not out of a parcel which had been divided amongst several growers, some of whom had good and others bad crops. We are of opinion, therefore, that the statements made on this subject by certain witnesses were somewhat exaggerated, and that due weight in cases of failure was not given to the influence of the soil, the cultivation of the land, the use of manures, and adverse conditions of weather during the sowing season as well as during the period of growth and harvest. In some districts there is still a belief that for light soils *Riga* seed alone is suitable, and that Dutch seed only should be sown on heavy soils. This is not borne out by the Department's variety tests, nor by the evidence given by many successful and progressive growers who have found from experience that good seed of either variety is equally suitable for all soils. We are satisfied, however, that the seed is an extremely important factor, and we are convinced by the evidence already referred to, by the character of the crops which came under our inspection, and by what we learned of the seed trade from the witnesses who appeared before us, that although there are other conditions necessary for the production of a good crop which require much attention, none needs more than that of the seed supply.

We have stated that the present custom is to import all the seed required in Ireland for sowing purposes. Although considerable information is available as to how seed is raised and prepared in Holland, little is definitely known about the history of that which is imported from Russia. The experience of Irish growers is that Dutch seed is irregular. As the flax crop in Holland is grown mainly for fibre purposes, seed being usually a secondary consideration, it is but natural that the quality of the seed should be somewhat sacrificed to the production of high-class fibre. Moreover, in a few instances,

seed of a variety which proved quite unsuitable for fibre purposes has been exported from that country. We have refrained from attempting to secure first-hand evidence in the seed districts of Russia owing to the time and cost such inquiries would involve, but we have received from reliable sources a good deal of information respecting the seed trade in that country. We understand that Russian flax is grown both for oil and fibre. Where fibre is the chief consideration, the crop is pulled, as in Ireland, in a green state. The seed from a crop harvested at this stage of growth is not, however, mature, and mature seed only is suitable for sowing purposes. On the other hand, where seed for oil production is the chief consideration, the crop is allowed to ripen, but possibly such crops may be of a character unsuitable for fibre purposes, and the seed therefrom, although properly matured, may not produce a satisfactory yield of fibre. Moreover, in some parts of Russia it is the practice to kiln dry the seed, in others it is dried in the sun. Kiln-dried seed appears to keep well, whereas sun-dried seed, owing to the relatively large amount of moisture allowed to remain in it, may deteriorate very quickly. While some excellent crops are grown in this country from Russian seed, it is only to be expected, in view of the foregoing considerations, that there should be great variation in the resulting crops. For these reasons it was suggested by some witnesses that the Department of Agriculture should make direct investigations in Russia and Holland, and take steps to secure that none but the best seed is selected for the Irish trade. It must, however, be apparent that the Department could not possibly interfere in a foreign country in the production and selection of seed, or in its preparation for sale. We think that the Department should adopt every possible means of inquiring generally as to the character of the crop in the respective countries, and that they should continue their practice of testing representative samples as early as possible, and of issuing in leaflet form the results of their inquiries and tests for the guidance of importers and growers in Ireland. In order to secure good seed farmers should be prepared to pay a fair price, and they should assist the importers by stating their requirements early in the season, so that the latter may be in a position to obtain the best parcels, which can be procured only if ordered in good time.

In the course of our inquiry, numerous references were made to experiments undertaken in this country by private individuals as well as by the Department of Agriculture on the saving for sowing purposes of seed from Irish flax crops. These trials show that with some care and trouble sowing seed can be saved in Ireland, although the results of field tests do not indicate that such seed is superior to that of any of the best brands imported. It must be remembered, however, that the production of flax seed for sowing is not extensively practised, and that there are few farmers who have as yet acquired the skill necessary to ensure success. Mr. John W. Stewart, in his memorandum inserted in the appendices, as well as in his evidence, strongly advocates that a systematic effort should be made to encourage the increased use of home-grown seed. He points out that the seed saved in Ireland and used in the trials referred to was not selected on the best system, and that to be successful seed should be taken only from the longest well-developed stalks in the best crops available. He recommends that the seed thus obtained should be used for the production of crops grown and saved with a special view to the supply in commercial quantities of seed for sowing purposes. After a careful consideration of this scheme, and an inspection of the method of selection advocated, we recommend that the Department of Agriculture should give it a fair trial. We consider that the investigation should proceed somewhat on the lines indicated in the memorandum in question, but that the details of the procedure should be settled in consultation with the officers of the Department who are engaged in the work of raising pure stocks of seed for various farm crops. In making this recommendation we have not overlooked the fact that under the auspices of the Board of Trustees of the Linen and Hempen Manufactures of Ireland the practice of sowing home-grown seed was encouraged by bounties early in the nineteenth century, and from the records available it would appear that at one time as many as seventeen thousand farmers engaged in this work. There is no evidence, however, to show that special care was taken in selecting seed from the most suitable crops. Indeed, from the large number who earned the

bounties, it would appear as if no attention had been paid to this matter, which is the main point in the recommendation which we now make.

CAROL
ANNOUNCES FOR
DECEMBER.

Handling.

23. The handling of flax from the time it is pulled until it is ready for the market involves processes requiring the highest skill if an article of superior quality is to be produced. It is true that the exercise of such skill in the after-processes cannot convert a badly-grown crop into first-class fibre, but, on the other hand, defective treatment of a superior crop may result in the production of a comparatively inferior article. The average farmer is able to understand and become skilled in the cultivation of flax, but it is not so easy for him to master the technique of the after-processes. Steeping or retting is an operation in which problems of a highly scientific character are involved, and the conditions under which it is carried out are so variable that it is not surprising that the results obtained are very irregular. More uniform and satisfactory results would in many cases be obtained by retting in large volumes of water such as lakes, rivers, or canals if the necessary arrangements could be made. The nearest approach to uniformity in retting appears to be the system adopted on the River Lys, near Courtrai. The flax having been dried in the fields, is brought to the Lys, sometimes from a great distance, and stacked until it can be retted in that river when the natural conditions are favourable. The Lys flows very slowly, and is well adapted for the uniform treatment of large quantities of flax.

In the past, many attempts have been made to devise methods of retting suitable for adoption at central retteries where all the operations would be effectively controlled. We received a considerable amount of evidence regarding an experiment on such a system made at Millisle, Co. Down by the Flax Supply Association. This experiment, to the cost of which the Department of Agriculture contributed, extended over five years. The process consisted in the retting of dried flax straw in tanks with water derived from one source and maintained at a uniform temperature. Those in charge of the experiment have reported favourably on the process. Their report, however, although it has now been in the hands of the public for two or three years, has not commanded sufficient confidence on the part of farmers or those otherwise engaged in the industry, to induce them to establish such a rettery on commercial lines. The system in question has also been tried on the Continent, and there, too, so far as we can ascertain, it has made no progress.

When questioned as to the practicability of such a project from the farmers' point of view, many witnesses stated that, in their opinion, the drying of the green flax preparatory to its being conveyed to and stored at the rettery could, in the majority of years, be successfully undertaken in this country. Others expressed their belief that, owing to the humidity of our climate, the process of drying would be attended with considerable risk of loss, and would thus add to the speculative character of the crop, to which we have already referred. In this connection, we had evidence that flax suffers damage by exposure to the sun. Our attention was also directed to the possibility of obviating these difficulties by the use of a drying rack. These subjects require investigation, which we consider should be undertaken by the Department.

Under existing conditions, flax is pulled at the end of July and the beginning of August. The retting and subsequent handling is completed by the end of the latter month or early in September, and the crop may be dealt with at the scutch-mill from September onwards. By November, therefore, the farmer may have received the cash for his flax to meet certain urgent calls which occur at that time of the year. If, however, the crop were to be dried and stacked at a central rettery and treated there under the above-mentioned or a similar system throughout the year the farmer would, in all probability, have to wait a long time for his money, and thus one of the incentives to flax-growing would be removed. It has been suggested to us by some witnesses that with a view to overcoming this difficulty companies might be formed which would purchase the flax on foot from the farmer and relieve him of all further responsibility in connection with its after-treatment and sale. If this could be accomplished, and if the company could afford to pay the farmer a price that would make flax as valuable as any other crop he grows, there is no doubt the scheme would be popular, and would have the effect of greatly encouraging the production of

flax in Ireland. Having considered the question very fully, we have come to the conclusion that the evidence given before us does not warrant any great hope for a development of the industry on these lines. We do not think that any further experiments with the above or similar systems are called for, unless they are to be carried out on a commercial scale. Should a syndicate be formed and the necessary capital subscribed to establish on such a scale a rotery worked on a method which would involve the drying of straw before steeping, we recommend that the Department should render assistance by affording such technical advice and instruction in the cultivation and after treatment of the crop prior to retting as might be required by the growers and those concerned in the project. We are not, however, prepared to recommend that the Department should undertake any further financial responsibility in connection therewith.

An important part of the handling of flax is the process to which it is subjected in the scutch-mill. A considerable amount of attention has already been given to this subject by the Department, and it was admitted by several influential witnesses that, in many cases, a considerable improvement has been effected. Throughout our inquiry we received extremely few complaints from farmers as to careless or defective work in scutch-mills. While there is undoubtedly need of improvement in scutching in some of the mills, the operation appears in a number of cases to be performed in a satisfactory manner. We would point out that it is to the interests of the mill-owners to do the best for their patrons, and we feel assured that many of them do so. Bad retting and carelessness in the other operations before the straw is brought to the mill are responsible in great measure for many of the defects which are usually attributed to bad scutching. Spinners, on the other hand, whilst admitting a considerable improvement of late in the scutching of Irish flax, advocate that more attention should be devoted to this operation. We concur in this view in the case of the better classes of flax which will stand extra handling, but with many, particularly the inferior sorts, the benefit derived from the improved scutching would probably be more than lost owing to a reduction in the weight of the resulting fibre. It should be observed that the higher cost of labour in scutch-mills and the improvement in scutching have not, as a rule, been accompanied by a rise in the charge made by mill-owners. In some districts, within recent years, growers have been required to pay a slightly increased charge in order to permit of more time and care being given to handling and scutching, and we think that this might be done, with advantage, in other districts.

The one point in regard to scutching on which some dissatisfaction was expressed was the manner of dealing with the rug and tow. In some districts it is customary for the scutch-mill owner to buy the tow from the farmer and to pay for it not according to the actual amount produced, but in proportion to the quantity of seed sown, or the weight of scutched flax yielded. In other cases the tow from each farmer's lot is retained and sold separately, the actual proceeds being paid to the farmer. While we think the latter method is the more satisfactory, we do not believe that there was any indication that the grievance alleged in connection with the former is a serious bar to the cultivation of the crop. We had an opportunity of inspecting a machine which has been invented recently for squaring flax straw before it is put through the rollers. It is claimed that by the use of this machine the amount of rug and tow produced from flax straw is decreased and the yield of scutched flax correspondingly increased. We consider that in the interests of the industry the Department should make a thorough trial of this or any other machine designed for improving the handling of flax.

Marketing.

24. The present system of marketing flax was adversely criticised by many witnesses, mainly those representing growers. It is no disparagement to a farmer to say that he is not in a position to go into the market and meet flax-buyers on the same footing as he can, say, the buyers of cattle, potatoes, grain or fodder. He is a good judge of the value of live stock and of general farm produce, but in the case of flax he has not the opportunity of acquiring the requisite expert knowledge to enable him to estimate its fair market value. The evidence shows clearly that farmers are fully conscious of

this, and we feel certain that, in conjunction with other causes of discontent to which we refer, it produces a general want of confidence which is certainly one important reason why so many farmers have abandoned the growing of flax. But for the friendly offices of the scutch-mill owners many growers would feel themselves entirely in the hands of the buyers. As was put before us in evidence, even the scutch-mill owners are not always in a position to meet the buyers on equal terms. We do not believe that the farmer can be satisfied with the system under which, in effect, he has to leave the price of his produce to be settled between the scutch-mill owner and the buyer. Although many flax-growers have great confidence in the scutch-mill owner, we are of opinion that in the majority of cases farmers would be more content if they had at their command the services of an expert, largely under their own control, who in addition to other duties would advise and help them in the marketing of the crop. The question of providing the farmer with such expert assistance is further dealt with in paragraph 29.

Flax is at present sold either at the scutch-mill or in the open market. In a few cases it is consigned direct to the spinning factory, and in 1909 an attempt was made in Belfast to employ the services of a commission agent to sell it by public auction. There appears to be very general dissatisfaction with the practice of selling flax at scutch-mills. Farmers cannot always be present when the spinner's representative arrives, and there is a widespread belief that the buyers previously arrange among themselves, not only the prices which they are to offer for the various grades of flax, but the particular mills at which each is to buy. Farmers believe that this is done in order to prevent competition, and that they therefore do not get fair play. The rapidity with which these ideas spread, and the disastrous effect they have in discouraging farmers from undertaking the cultivation of flax can readily be understood. We received, however, in the course of our inquiry, a document signed by a number of buyers employed by various spinners and commission houses, protesting against the statement of witnesses that there was any combination among the buyers to prevent competition. The representatives of some of the leading firms of spinners informed us that if buyers had occasionally acted in a manner calculated to arouse a farmer's suspicions, they had done so without instructions and contrary to the wishes of their employers. Notwithstanding this, we feel that some buyers have given justification for the very general complaint that there is combination to keep down prices, but it appears to us that this applies almost entirely to sales at mills and to those made in the open market in localities where buying at mills is common. At the same time, we think that some individual witnesses exaggerated their grievances in this respect. The fact, however, that the belief in the existence of combination is widespread and firmly implanted in the minds of many farmers, is much to be deplored. It would be greatly to the interest of flax-growing if spinners and commission houses, who are the predominant parties in the sale and purchase of flax, would take every possible means to remove any grounds which may exist for such suspicions.

We strongly recommend the discontinuance of the practice of selling flax at scutch-mills, and we consider that this can best be brought about by concerted action on the part of spinners, commission houses, scutch-mill owners and farmers. We suggest that the Department of Agriculture should convene a conference of all these interests, with a view to arriving at some definite understanding in this matter. Such conferences, held in Belfast in 1905, under the auspices of the Department, had in a number of cases considerable results in the improvement of flax markets, and we anticipate that further meetings in Belfast and the various flax-growing districts would be still more advantageous now that our sittings have again stimulated interest in this subject. Some of the witnesses were of opinion that the difficulty could best be overcome by scutch-mill owners acting alone, and we had evidence to show that in a few districts the owners had agreed to bind themselves to sell no flax at their mills. We are informed that this arrangement has worked satisfactorily when the scutch-mill owners were unanimous. We think, however, that it is not a question solely for mill owners. As the flax is the property of the farmer, he is the person most interested in its sale. Spinning firms and commission houses, we believe, are quite ready to discontinue purchasing at mills so long as there is a clear

We concur in the opinion that sales in the open market or by auction should be encouraged because of their educational influence, since they ensure that all lots of scutched flax are exposed for inspection and criticism.

Before leaving this subject, we wish to draw attention to another difficulty in the marketing of flax which operates against the development of the industry. There is a general belief justified by the range of prices in the majority of seasons that in order to secure the best price flax must be scutched and sold before the New Year. Added to this, there is the desire on the part of many farmers to have their flax scutched as speedily as possible, so that its value may be realised in time to make certain payments, such as purchase instalments, rent, &c., which fall due in November. An excessive strain is accordingly put upon the workers in scutch-mills early in the season, which results in the defective handling of flax, the lowering of the reputation of Irish scutching, and the depreciation of the average price of flax grown in this country. Unfortunately this tendency to rush the work early in the season is intensified by the practice of spinners who lay in the great bulk of their Irish stock of fibre just at this time. This stimulates competition until the stocks are made up about Christmas. Afterwards the attendance of buyers at markets becomes less frequent, competition diminishes, and, in most years, prices decline. If by concerted action on the part of spinners it could be arranged that their purchase of Irish flax extended till later in the year, and that their buyers attended the markets as frequently after as before the New Year, the handling and scutching of flax would be better done and the fear which farmers now have that there will be no ready sale for their flax if it is scutched late in the season would be removed.

25. We received very conflicting evidence with regard to the labour question. Many witnesses attributed the cause of the decline in flax-growing to the scarcity, inefficiency and increased cost of workers. We believe that the scarcity of labour does militate against tillage generally, and still more against the cultivation of flax, which requires a great deal of labour at seasons when other agricultural operations demand the attention of the ordinary farm hands. Furthermore, it is the only general farm crop for which labour saving machinery has not been devised to any considerable extent. Pulling, retting, spreading, lifting and stacking must be done by hand. Farmers resident in districts within the sphere of influence of industrial centres have, generally, less difficulty in obtaining casual labour than those situated in remote rural districts, and we accordingly found that the former laid less stress upon the scarcity of labour than the latter. Witnesses who were not inclined to think that the difficulties in connection with labour had contributed in any great measure to the decline of the industry, pointed to the fact that no one could instance a case where the crop had been lost for want of hands to work it. This argument is not, in our opinion, conclusive, since there are doubtless many farmers who would have sown more flax if they had been quite certain of obtaining the necessary labour when required. We have also received evidence that in many districts holders of large farms have ceased to grow flax, whereas those owning smaller holdings still continue to cultivate this crop as they do not depend upon hired labour for their farm work. It was pointed out, however, that the general labour problem is less acute in flax-growing districts than in those in which the crop is not cultivated, since the labourers who are engaged in the scutch-mills in winter are available for general farm work, including the handling of flax, in summer. In addition, farmers have the advantage of the labour of the families of scutchers who reside permanently in the neighbourhood of the mills. As to the quality of labour, we believe that the increasing difficulty of finding skilled farm workers, which is so seriously affecting the whole of the tillage industry of Ireland, is bound to operate in a special degree against the cultivation of flax, which, of all crops, needs most skilful workmen in every stage of its cultivation and handling. Finally as to cost, there is no doubt that labour is more expensive than it was formerly, and this tells specially against flax-growing, which requires proportionately more labour than other farm crops.

Labour.

26. One cause assigned for the decline in flax-growing was that within recent times the seasons have become more unfavourable to the cultivation of the crop. We have made inquiries with regard to this statement, and we find there is nothing to warrant the belief that there has been any distinct change in the climate. Close students of meteorological conditions are unable to discover any decided difference in the present climate as compared with that experienced by previous generations. A succession of adverse seasons has undoubtedly a depressing effect on the cultivation of any farm crop, and we can readily understand how it specially affects flax-growing, which has for many other reasons been declining during a long period.

27. It has long been a matter of common knowledge that water in which flax has been steeped is deleterious to fish, and as far back as Elizabethan times legislation on the subject existed in Ireland. Salmon and trout spawn in the rivers and tributary streams during early winter. Their eggs are hatched in February and March, and in early summer the young fish disperse over large areas finding their way into streams smaller than any frequented by adult fish. Salmon fry, for instance, have been found at a distance of two miles from the nearest spawning place. After hatching, young salmon and sea trout remain in fresh water for at least fourteen months, generally for about twenty-seven months, and sometimes for three years, before assuming their silvery coats and migrating to the sea. They subsequently return to the rivers as grilse or adult fish. The brown trout does not so migrate, and its whole life is therefore spent in fresh water. These fish are all very susceptible to the asphyxiating influence of any flax-water which may be allowed to run into the rivers. The common eel spawns in the depths of the sea, and in the spring its young enter the rivers in immense numbers as "elvers," a few inches long, and disperse throughout all the watercourses. They remain in fresh waters until they become mature and marketable, which is estimated to take about six or seven years. Eels are much less susceptible to the effects of flax-water than are salmon and trout. The pollan, of Lough Neagh, is the only other fresh-water fish of commercial importance in flax-growing districts. It is probably not affected by flax-water, as it lives and breeds in that lake and not in the tributary streams. Salmon, trout, and eels can therefore be affected by the flax-water of several seasons during their life-history.

The value of those salmon and trout fisheries of Ireland which depend for their fish supply upon districts in which flax is grown is estimated at about £100,000 a year. To this must be added the value of the eel fisheries, which is probably £15,000 a year. The Foyle and Bann Fisheries Company exercise, under the Irish Society, valuable rights of salmon-fishing in those two rivers, and give employment to several hundred men. On the Moy, Erne, Bush, and other rivers there are also important fisheries, and bag nets for salmon are used around the coast. In Lough Neagh, commercial fisheries for pollan, trout, and eels are carried on with nets and lines by about seven hundred and fifty fishermen. In addition to these commercial interests, much value attaches to angling rights, which are the means of bringing a considerable amount of money into the country. Important eel-fishing rights are exercised by several private individuals, principally on the Bann. Besides the fisheries carried on in fresh-water and estuaries, there is, off the North and North-west coasts, a public industry in fishing for salmon with drift nets at sea, at which about sixteen hundred men are engaged during the early summer.

The key to the existence of all these industries is the supply of young fish, which can be produced only in the rivers and their tributaries.

Numerous instances of the destruction of fish and their fry were brought before us in evidence, and we have no doubt that flax-water, when discharged into streams of small volume, is fatal to the fish life therein. It is, moreover, probable that flax-water, even when considerably diluted, adversely affects fish life. Although no exact observations on this latter point have been made, the conclusion would seem to be justified by the fact that salmon in the large rivers will not rise to the fly during the flax-water season. It is, therefore, our opinion that the damage to fish life more especially in tributary streams by the discharge of such water is serious enough to warrant its control in the interests of the fishing industry.

The disposal of flax-water in Ireland is regulated by Section 80, of 5 and 6 Vict., chap. 106, of the Irish Fishery Code, which provides:—

"And be it enacted that no person (a) shall throw, empty or cause to run or flow into any river or lake any dye stuff or other deleterious or poisonous liquid, (b) or shall throw into any such river or lake any lime spurge or other deleterious or poisonous matter, or shall steep in such river or lake any flax or hemp, (c) and if any person shall so offend he shall forfeit and pay for every such offence any sum not exceeding ten pounds; provided always, that nothing in this Act contained shall extend or be construed to render any person liable to the penalties hereby imposed for casting into any river or stream any dye stuffs or other materials which are not of a deleterious nature, or which are not in a state poisonous to fish or other animals using the waters thereof."

Provisions to the same effect are contained in the English, Scottish, and Tweed Salmon Fishery Acts. In the case of the last named, the water in which flax has been steeped is specifically mentioned as being deleterious to fish. In many Continental countries, too, stringent regulations are in force.

Any member of the public is entitled to institute prosecutions under the above Section of the Irish Fishery Code, but in practice it is done only by the Boards of Fishery Conservators, the Royal Irish Constabulary, and the proprietors of large fisheries.

We believe that farmers, on the whole, have no desire to injure the fisheries, but we have been very much struck by their general lack of accurate information as to the life-history of fish, and as to the damage that is done by flax-water. This want of knowledge is easily understood as the larger fish are not to be found in the tributary streams, except during high water in winter when they are breeding. The small fry left are difficult to detect or are mistaken for minnows or "stickle-backs," and when killed are not easily seen in the discoloured water. This being so, it is not unnatural that the farmer should feel aggrieved by prosecutions against him for offences which he does not regard as serious.

Cases of wilful injury done by the farmer, and of harsh dealing on the part of the fishery officials, seem to be alike exceptional. We regret to say, however, that we have observed instances in which farmers have deliberately allowed flax-water to flow into rivers without taking possible precautions, and also that bailiffs are to be found who appear to allow their personal feelings towards individual farmers to influence their actions when inspecting flax dams. The time of such bailiffs is often occupied in efforts to detect offences of minor importance, whilst serious ones are not observed. Moreover, we are of opinion that proper discrimination is not always shown by some authorities in the selection of cases for prosecution.

There is a general consensus of opinion, in which we concur, that the practical solution of the difficulty of the disposal of flax-water is either (1) the provision of a catch-dam into which the water from the flax-dam could be discharged and subsequently run off slowly when the river is in flood or when the flax-water has become innocuous, or (2) the diversion of the flax-water over ground through which it could gradually percolate where this is practicable. In many cases an arrangement of this kind already exists, and, in our opinion, the provision of a catch-dam is generally possible. Where neither procedure is practicable owing to physical conditions or excessive cost, flax-water might be safely removed from the dam by a suitable pump, or the provision of wading trousers would enable a man to go into the dam in comparative comfort and throw out the beets. We were informed of instances where both methods were adopted with success.

We think that research should be carried out with a view to determine the degree of dilution, or of purification by aeration, and possibly the chemical treatment which would render flax-water innocuous.

It was stated in evidence that flax-water possesses valuable manurial properties, and that on this account it should be used for irrigation purposes. In support of this statement it was argued that grass on which retted flax has been spread is greatly benefited. This result must, however, be due to the shelter afforded by the flax, as analyses made specially for the Department of Agriculture as well as other analytical data placed before us, demonstrate that the manurial value of flax-water is negligible.

In spite of the disabilities under which the flax-growing industry has been placed in the interests of fisheries, we have been able to find only two or three specific cases in which a farmer abandoned the cultivation of flax solely because of fishery prosecutions. At the same time we believe that taken in conjunction with other difficulties, these prosecutions have had some deterrent effect on the industry. We are of opinion that by some minor modifications of the law, and other steps to be afterwards noted, a better feeling could be established between the two interests, to their mutual advantage.

It is at present the practice that no prosecution for these offences is instituted by the Constabulary without the previous sanction of the Department of Agriculture, in their capacity as the central Fishery Authority. We consider that this principle might usefully be extended, so that the consent of the Department would be obligatory in all cases before the institution of any legal proceedings for flax-water offences. The Department of Agriculture, also in their capacity as the central Fishery Authority, have, under the Fishery Acts,* power to exempt in certain cases owners of mills driven by water-power from compliance with the fishery laws requiring the maintenance in mill races of gratings, fryguards, etc. There being many rivers, streams and lakes in which flax might be steeped, or into which flax-water might be discharged, without doing any material harm to the fishing industry, we are of opinion that further powers might be granted to the Department so that such rivers, streams, and lakes, or parts thereof, might be exempted on such conditions as they might deem fit. We also think that, as the Department are the body which should hold the balance between the two interests, they should be empowered to obtain statistics of capture in the case of inland fisheries in order to enable them to estimate their relative importance. At present such statistics are obtainable only in an indirect and incomplete manner.

The defendants in these prosecutions are precluded in Ireland from giving evidence on their own behalf. It was represented to us that this is considered by farmers to be a grievance, and we are of opinion that the law might be amended in this respect. It is but natural that in flax-growing districts the sympathies of a Petty Sessions Bench should be inclined towards the grower. We consider that in the large majority of flax-water cases the fines inflicted are so small that they do not act as a deterrent. If the suggested modifications of the law were adopted, we think it would be but proper that the farmer who contravened the regulations should then be liable to a minimum fine, and, subject to the foregoing proviso, we concur in the recommendation of the Irish Inland Fisheries Commission,† that a minimum penalty of 10s. should be provided for a first offence and of £1 for a second.

In addition to these changes in the law, we suggest that Boards of Conservators and owners of fisheries should exercise more care in the selection of bailiffs whose duty it is to prevent the pollution of rivers by flax-water. It should not be forgotten that the man who deals successfully with a salmon poacher is not necessarily the man who will be equally successful in dealing with an offending flax-grower. We are of opinion that it would be to the interests of flax-growing as well as of fisheries that the funds of Conservators should be supplemented where necessary by State grants on suitable conditions, so that a higher class of bailiff might be employed. The appointment of the bailiffs in such instances should be subject to the approval of the Department of Agriculture. We also consider that Boards of Conservators should take more interest in the individual cases which come before their officials, and that the initiation of prosecutions should not be left entirely in the hands of their clerks and inspectors. A Standing Committee of each Board might be appointed to deal with such cases as might arise in the intervals between the meetings of the Board.

We are of opinion that useful work could be done by Agricultural Instructors in flax-growing districts by spreading amongst farmers a better knowledge of the life-history of fish, of the value of the fishing industry, and of the means by which injury may be avoided. Other methods of disseminating this information, such as the issue of leaflets, might also be employed with advantage.

* 32 Vict., c. 9, s. 4, and 52 & 53 Vict., c. 50, s. 3, Schedule 1.

† Report of Irish Inland Fisheries Commission, Par. 6 (5). [C6. 442] 1901.

SCHEMES FOR ENCOURAGING IMPROVEMENT IN THE INDUSTRY.

SCHEMES FOR
ENCOURAGING
IMPROVEMENT

23. In the course of our investigations we have made inquiry into the working of the schemes which the Department of Agriculture have instituted with a view to encouraging improvement in the flax-growing industry. These have now been in operation for ten years. Their important features comprise the appointment of an Advisory Committee, the award of prizes for scutched flax and for flax on foot, the carrying out of field experiments with manures and varieties of seed, the arranging of scutching tests, the sending of deputations of farmers to the Continent, and the conducting of tests in drying flax, saving of seed, and retting under artificial conditions. Witnesses, on the whole, spoke favourably of the benefit which these schemes have conferred on the industry. Their cost, we find, has been about £2,000 per annum, and we are satisfied that the results fully justify the expenditure. Some of the schemes have been modified from time to time, while others have fulfilled their purpose and have therefore been discontinued. We think that, of those still in operation, the award of prizes for scutched flax or for flax on foot and the sending of deputations of farmers to the Continent may now be discontinued for the same reason.

We recommend to the Department of Agriculture the retention of the services of the Advisory Flax Committee; the extension of the system of placing at the disposal of farmers the services of experts; the continuance of experiments in the cultivation, manuring, and handling of flax, as well as in the use of varieties of seed; the vigorous prosecution of investigations into the saving and use of home-grown seed; the appointment of one or more experts to assist scutch-mill owners in the preparation of plans for the better ventilation of their mills, and of others to instruct them in the most improved methods of scutching; the convening of conferences of farmers, scutch-mill owners and buyers to put a stop to the selling of flax at mills, and to encourage sale in open markets or at auctions; the convening of conferences between fishery owners and farmers with a view to a better understanding with regard to the disposal of flax-water; the making of grants to Boards of Conservators for the employment of a superior type of bailiff, whose appointment should be subject to the approval of the Department; the conducting of experiments on the disposal, purification, and chemical treatment of flax-water and the influence on fish life of such water in various degrees of dilution; and the investigation of problems relating to retting. In addition to these operations, generally applicable to the whole of the country, we recommend that special efforts should be made to promote the revival of the industry in districts where it is now almost extinct. In such cases we think the Department could legitimately render assistance of a direct character, such as by affording help in the erection of new or the renovation of old scutch-mills, when by so doing they would not injure private enterprise or the interests of the proprietors of old-established and satisfactory scutch-mills. Considering the extent and importance of the industry, the gross value of which is about £500,000 sterling per annum, the Department would be justified in setting aside for the above purposes a much larger sum than they have hitherto done.

Finally, we are of opinion that in the carrying out of these schemes the Department should endeavour to work, as far as possible, through combinations of farmers, to the formation of which we attach the very greatest importance, and to which we refer in more detail in the next paragraph.

NEED FOR COMBINATION AMONG GROWERS.

COMBINATION
AMONG
GROWERS.

29. We have indicated above the main lines on which we think the Department of Agriculture could legitimately and usefully expend an increased grant on encouraging improvement in the flax-growing industry. We desire to emphasise the fact that the cultivation and handling of flax are more difficult, and require the exercise of greater skill, than the operations connected with the growing of other farm crops. Experience

has shown, both in this and in other countries, that for the dissemination of technical knowledge among farmers there is no better agent than the itinerant instructor. We were much impressed by the general testimony to the value to flax-growers of the services of the three instructors who have been at work for the last ten years under the Department, and before that period under the Flax Supply Association, and also of the instructor who has been employed by the Department for the last three years in County Cork. One or two instructors in a county can effect a great deal of good in promoting the ordinary agricultural operations by means of field demonstrations, lectures, distribution of leaflets, and the giving of advice to individual farmers. The technique of growing and handling flax is, however, too difficult to be imparted by such means. It is necessary that the instructor should be able to visit almost every flax-grower and to give him direct and personal instruction. This is particularly necessary in the case of those with little experience and knowledge of the subject. It is not surprising that knowledge regarding this industry is by no means widespread, since flax is not a crop which is so generally or regularly grown as others. We strongly recommend therefore, that the same principle which the Department have applied to instruction in other agricultural operations should be more freely extended in the case of flax-growing, and that for this purpose steps should be taken to select and train a staff of men suitable for the work. Each expert should be allotted to a district sufficiently small to enable him to give individual attention to the flax-growers residing therein. We are perfectly satisfied that if such trained men are carefully selected, and have the power of imparting instruction and taking a sympathetic interest in the work of individuals, their services will be in great demand, thoroughly appreciated, and productive of the greatest possible good in extending and improving the industry. It would be the duty of such officers generally to help and advise farmers in all matters relating to flax-growing, including the cultivation of the land, the selection and sowing of the seed, and the pulling, retting, and scutching of the crop, as well as the marketing of the fibre. In addition, they would be required to conduct experiments which would be devised for them by the Department with the assistance of the Advisory Committee, and should our recommendations with regard to the raising of sowing seed in this country be put into effect and the experiment prove a success such work should form an important part of their duties.

The allocation of the time of these officers could not be conveniently arranged and supervised solely by the Department of Agriculture. We think there is but one way in which this could be effectively done, viz., through societies of flax-growers, to each of which an expert would be assigned for the purpose of assisting its members. It should be a condition that the society should pay a proportion of the expert's salary, the remainder being provided by the Department, so long as his work was satisfactory, and the members of the society availed themselves fully of his services. We had before us evidence of the work of some ten or twelve societies which have, from time to time, employed an expert under somewhat similar conditions to those now outlined by us. In addition to affording advice to the members in the cultivation and after-treatment of the crop, one of the main objects of these societies was the owning or renting of a mill for the scutching of flax, the expert in many cases being employed as manager. Where there is no mill or where the existing mills do not afford proper facilities, we see no reason why a combination of farmers, such as we describe, should not provide a mill for the scutching of their own flax and possibly in certain cases utilise the officer in question as manager. We do not think, however, that this should be the principal object of the society, and we are supported in our opinion by the evidence of the Secretary of the Irish Agricultural Organisation Society, who deprecated the formation of further societies on the lines of those already in existence. The experience of the working of the mills in recent years by the co-operative flax societies referred to indicates that the members would, in some cases, have been equally well served had their flax been scutched in the proprietary mills, especially if the time of the experts had been spent in attending to the flax at the scutch-mill and at the market. We have every reason to think that combinations of farmers, such as we have mentioned above, would meet with the approval of the majority of those who favour co-

operation amongst flax-growers. In no way do we think the employment of an expert by a combination of farmers could be more useful than in the production or purchase of seed and in the marketing of the members' flax. Where the flax is sold in the open market or by auction, the services of the expert would be of the utmost value to farmers, and his assistance would establish that confidence which many of them do not now possess, and the absence of which, as we have already stated, is one of the causes contributing to the decline in the cultivation of flax.

COMBINATION
AMONG
GROWERS.

SUMMARY OF PRINCIPAL CONCLUSIONS AND RECOMMENDATIONS.

SUMMARY.

30. The following is a summary of our principal conclusions and recommendations:—

(1.) The area under flax in Ireland has for several decades gradually declined. Twelve years ago it had fallen to 34,469 acres—the lowest recorded. Since then some improvement has taken place, as indicated by the following figures:—

1896-1900—Average annual acreage	46,939
1901-1905	"	"	48,064
1906-1910	"	"	49,169

(2.) Extreme fluctuations have always characterised the area under flax, and for this reason crop statistics by themselves do not justify definite conclusions in regard to the future of the industry.

(3.) In view of the following considerations, we believe that flax-growing in certain districts will be continued and extended:—

- In Ulster—which has always been the centre of the industry—the decline is less marked than in the other provinces. Indeed, in certain parts of that province flax-growing shows comparatively little sign of decay.
- There has been a contemporary decline in the area under flax in other countries. At present fibre is scarce, which circumstance will no doubt lead to an increase in the world's acreage of flax, and we see no reason to believe that there will not be in Ireland an extension proportionate to that in other countries.
- Irish flax possesses in a special degree strength and spinning qualities which make it almost a necessity for certain branches of the Irish spinning industry. The increased number of spindles now in use shows that this industry has of late years greatly extended, and there would, therefore, appear to be good prospects of a demand for those classes of Irish fibre which are particularly suited to its requirements.
- The demand for Irish linens is likely to be further stimulated should the price of cotton maintain a high level as some anticipate.

(4.) In the interests of the Irish spinning industry it is most important that the art of growing and handling flax should be kept alive so that in the event of any circumstance arising which would interfere with the importation of foreign fibre, flax-growing could be quickly revived in order to supply the needs of the mills. Spinners should accordingly give preference to home-grown flax whenever it suits their purpose and can be purchased as cheaply as the foreign article.

Several Irish spinners use no home-grown fibre, and at present only from one-fifth to one-fourth of the fibre required in Irish mills is produced in this country.

(5.) While a number of causes have contributed to the decline in flax-growing, the outstanding one is the speculative character of the crop due to uncertainty of price and yield.

(6.) Flax-growers as a body believe that in the matter of price they are not fairly treated by buyers. They point out that a rise in the price of yarns is not always accompanied by a rise in the price of flax, and that a higher price is given for foreign flax than for Irish. Moreover, they allege that a combination exists amongst buyers to prevent competition.

While the explanations given by the spinners as to the relative prices of yarns and fibre, and as to the apparently higher price paid for foreign flax, appear satisfactory, there is some justification for the suspicion that in certain districts where sale at mills is common, local buyers sometimes combine to keep down prices. This practice is, however, by no means general, nor has it the approval of leading spinners and commission houses.

(7.) The monetary return from the crop is influenced as much by yield as by price. Farmers should accordingly endeavour to improve the yield and quality of their fibre instead of relying solely on the possibility of relatively high prices prevailing when they have flax for disposal.

(8.) Irish flax occupies a position intermediate between Courtrai, the highest priced, and Russian, the lowest priced. Growers should, in these circumstances, strive to compete with the former; they cannot profitably compete with the latter.

(9.) With regard to the uncertainty of yield, it would appear that the successful cultivation of flax depends much more upon the suitability of the soil, seasons, and seed, and less upon the application of manures, than is the case with other crops. Moreover, flax is liable to serious depreciation in the course of the highly technical processes to which it must be subjected in its preparation for market.

(10.) Having regard to the irregularity of soil in Ireland as compared with that on the Continent, Irish flax-growers cultivate the crop as intelligently as their Continental rivals.

(11.) The quality of the seed is an extremely important factor in determining the character of the crop. Great variation exists in the present seed supply, which comes from Russia and Holland. It is in many cases, doubtful whether the seed so imported is specially selected with a view to the production of superior fibre, for which purpose alone it is sown in Ireland.

(12.) The opinion which prevails in some districts that Riga seed is suited to light and Dutch seed to heavy soils is not borne out by experiments conducted by the Department of Agriculture, nor by the evidence of many successful growers.

(13.) The Department of Agriculture should carry out extensive trials to determine whether better sowing seed could be produced from Irish crops than is now available from foreign sources of supply. A system of selection, similar to that successfully adopted for cereals, should be followed in these experiments.

(14.) The quality and yield of fibre is influenced very much by the method of retting employed. The great variation in the character of the ponds and in the quality of the water in which flax is steeped increases the difficulty in securing uniform results.

(15.) The Department of Agriculture should undertake the investigation of problems relating to retting.

(16.) While it might be possible to find in Ireland a suitable river, canal, or lake in which uniform steeping could be secured, the greater difficulty of drying flax straw, and the absence of intermediaries to buy the crop on foot, are serious obstacles to the adoption of the Courtrai system of retting.

(17.) Should, however, a syndicate be formed for the purpose of buying and retting flax on the Courtrai system, or by means of any successful artificial method, the Department of Agriculture, while accepting no financial responsibility in connection with the project, should be prepared to provide such technical advice and instruction in the cultivation and drying of the crop as might be required by the growers and those concerned in the undertaking.

(18.) Although there is room for improvement in scutching in some mills it would appear from the evidence that in a number of cases this operation is performed in a satisfactory manner. Bad retting and carelessness in the other operations before the straw is brought to the mill are responsible in great measure for many of the defects which are usually attributed to inferior scutching.

(19.) The Department of Agriculture should make provision for the appointment of one or more experts to instruct scutch mill owners in the most approved methods of scutching, and of others to advise them in the preparation of plans for the better ventilation of their mills.

(20.) Owing to the desire of farmers to realise the value of their flax as soon as possible, an excessive strain is placed on the scutch-mills at the beginning of the season, which tells severely against good scutching and tends to lower the average price obtained for flax in this country. Spinners appear to purchase their supplies of Irish fibre early in the season with the result that the tendency to rush the scutching of the flax is intensified. This state of affairs can be remedied only by concerted action on the part of producers and buyers.

(21.) The selling of flax at scutch-mills is a most unsatisfactory method of marketing, and should be discontinued. It is calculated to foster suspicion as to want of proper competition amongst buyers. Moreover, as the best lots of flax are almost invariably disposed of at the mills, the prices obtained in the markets are lower than those current at mills. The market prices alone appear in the Press, and the publication of these comparatively low figures discourages farmers from engaging in the industry.

(22.) The Department of Agriculture should promote conferences of farmers, scutch-mill owners, spinners, and commission agents, with the object of bringing about the abolition of sales at scutch-mills and the general adoption of the practice of selling all flax in the open market, either by auction or by private sale.

(23.) The scarcity, inefficiency and increased cost of labour militate against tillage in general, and specially against the cultivation of the flax crop. The general labour problem is, however, less acute in flax-growing districts since the scutching of the crop gives employment to a number of men in winter, who, with their families, are often available for work in the fields in summer.

(24.) There is nothing to warrant the opinion frequently expressed that the decline in flax-growing is attributable to a distinct change in the climate.

(25.) The discharge of flax-water into rivers and small streams causes great damage to the fishing industry, mainly by the destruction of fry.

(26.) As it is difficult to see fry either alive or dead in rivers and streams, farmers as a rule do not realise the seriousness of polluting water-courses.

(27.) Where flax-water cannot be run over land so that it will percolate into the soil, the solution of the difficulty is to be found in the use of catch-dams.

(28.) The Department of Agriculture should conduct experiments on the disposal, purification, and chemical treatment of flax-water, and on the influence on fish life of such water in various degrees of dilution.

(29.) The law relating to the pollution of rivers by flax-water, and to the initiation of prosecutions in this connection requires modification in the following respects:—

- (a) The consent of the Department of Agriculture should be a condition precedent to the institution of any proceedings for flax-water offences.
- (b) The Department should be invested with powers to permit the steeping of flax in, and the discharge of flax-water into such rivers, streams, and lakes as are of little or no importance to the fishing industry.
- (c) The Department should be empowered to obtain statistics of capture in the case of inland fisheries.
- (d) The defendants in the prosecutions in question should be allowed if they so desire to give evidence on their own behalf.
- (e) Provided the foregoing modifications in the law are adopted, a minimum penalty of 10s. for a first offence and £1 for a second should be prescribed.

(30.) The Department should take steps to spread amongst farmers a better knowledge of the life-history of fish and of the value of the fishing industry, and they should arrange conferences between farmers and those engaged in the fishing industry with the object of promoting a better understanding than at present exists between them.

(31.) The schemes formulated by the Department of Agriculture for encouraging improvement in the flax-growing industry have had a beneficial effect, but the time has now come when those providing for the award of prizes for scutched flax and for flax on foot, and the sending of deputations of farmers to the Continent should be discontinued.

(32.) Further experiments in the cultivation, manuring, and handling of flax, as well as in the use of varieties of seed, should be devised and carried out by the Department of Agriculture, in consultation with the Advisory Flax Committee.

(33.) The Department of Agriculture should devote increased attention to the revival of the industry in districts where it is now almost extinct, and in such cases they might give direct aid in the erection of new or the renovation of old scutch-mills, when by so doing they would not interfere with private enterprise.

(34.) In the application of their schemes for the improvement of flax-growing, the Department of Agriculture should work as far as possible through societies of flax-growers, which should not, unless in exceptional circumstances, undertake the owning or renting of mills for the scutching of their members' flax.

(35.) The Department of Agriculture should train a staff of men in the cultivation, handling, and sale of flax, and should place the services of the men so trained at the disposal of combinations of growers.

(36.) The cost of providing these experts should be borne mainly by the Department, but the societies should pay a proportion of their salaries.

(37.) Considering the extent and value of the industry, as well as its importance to the spinning and allied trades, the Department of Agriculture should increase their annual allocation in respect of flax schemes in order to give effect to the above-mentioned recommendations.

(38.) In the interests of flax-growers, as well as of those concerned in the fishing industry, the funds of Boards of Conservators of Fisheries should be supplemented by State grants on suitable conditions, so that a higher class of bailiff might be employed. The appointment of bailiffs in such cases should be subject to the approval of the Department of Agriculture. SUMMARY.

We desire to place on record our high appreciation of the services rendered by our Secretary, Mr. George T. Fidler. By the industry, foresight, and grasp of the work generally which he has displayed throughout the course of our inquiry, and by his assistance in the drafting of this Report, he has greatly facilitated our labours.

We have the honour to be,

SIR,

Your obedient Servants,

J. R. CAMPBELL, *Chairman.*

H. BARBOUR,

JAMES G. CRAWFORD,

JOHN W. STEWART,

JAMES STEWART,

DANIEL H. LANE,

JAMES S. GORDON,

JOSEPH H. HINCHCLIFF,

GEO. T. FIDLER, *Secretary.*

Dublin, Dated this Twentieth Day of January, 1911.

DUBLIN CASTLE,

4th February, 1911.

SIR,

I have to acknowledge the receipt of your letter of the 3rd instant, forwarding for submission to His Excellency the Lord Lieutenant the Report of the Departmental Committee on the Irish Flax-growing Industry, with Minutes of Evidence taken by the Committee and Appendices thereto.

I am,

SIR,

Your obedient Servant,

E. O'FARRELL.

THE SECRETARY,

DEPARTMENT OF AGRICULTURE

AND TECHNICAL INSTRUCTION FOR IRELAND.